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Commissioner for Patents U.S. Patent and Trademark Office

Alexandria, VA 22313-1450

P.O. Box 1450

6/19/06

pplicant:

Smith et al.

10/765,223

Filed:

January 26, 2004

For:

REFERENCE WAFER AND

PROCESS FOR

MANUFACTURING SAME

Art Unit:

1756

Examiner:

Young, Christopher G.

INFORMATION DISCLOSURE STATEMENT **IN ACCORDANCE WITH 37 C.F.R. §§ 1.97-1.98** 

Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450

Sir:

In accordance with the duty of disclosure imposed by 37 C.F.R. § 1.56 to inform the Office of all references known by Applicant or Applicant's representative that may be material to the examination of the subject application, Applicant's representative hereby provides this Information Disclosure Statement that is prepared in accordance with 37 C.F.R. §§ 1.97-1.98. Form PTO/SB/08 (8 pages) and a copy of the cited non patent literature is provided herewith in connection with the above-captioned application. The cited references that comprise issued U.S. patents are not attached, per the Notice of waiver published in the Official Gazette on August 5, 2003.

Although these documents and information are made known to the Patent and Trademark Office in compliance with Applicants' duty of disclosure, such disclosure is not to be construed as an admission by Applicants or Applicants' representative that any of the references, singly or in any combination thereof, is effective as prior art against the subject application. In accordance with 37 C.F.R. § 1.97(h), the filing of this Information Disclosure Statement shall not be construed to mean that a search has

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Appl. No.

Applicant: McArthur et al

Serial No. 10/765,223 - Filed: January 26, 2004

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been made or that no other material information as defined in 37 C.F.R. § 1.56(b) exists.

Applicants respectfully request that the Examiner review the foregoing references and request that they be made of record in the file history of the above-captioned application.

A check in the amount of \$180.00 is enclosed as required under 37 CFR 1.17(p). The Commissioner is hereby authorized to charge any fee, including any submitted herewith if the attached check(s) is in the wrong amount or otherwise improper or missing, that may be due in connection with this and the attached papers, or with this application during its entire pendency to or to credit any overpayment to Deposit Account No. 50-1213. A duplicate of this sheet is enclosed.

Respectfully submitted, HELLER EHRMAN LLP

Steven A. Moore

Registration No. 55,462

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SD 809146 v1(38203.6081)

PTO/SB/08a (07-05) Approved for use through 07/31/2006. OMB 0651-0031

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stitute for form 1449A/PTO

## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Complete if Known

Application Number 10/765,223

Filing Date 01/26/2004

First Named Inventor Smith et al

Art Unit 1756

Examiner Name C. Young

(Use as many sheets as necessary)

Sheet 1 of 8 Attorney Docket Number 38203-6081B

			U. S. PATENT	DOCUMENTS	
Examiner Initials*	Cite No. <sup>1</sup>	Document Number  Number-Kind Code <sup>2 (if known)</sup>	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		us-4,757,207	07/1988	Chappelow et al	
		us-4,861,148	08/1989	Sato et al	
		us-4,929,083	05/1990	Brunner	
		∪s- 5,124,927	06/1992	Hopewell et al	
		US- 5,262,257	11/1993	Fukuda et al	
		US- 5,285,236	02/1994	Jain	
		us- 5,438,413	08/1995	Mazor et al	
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		∪s- 6,064,486	05/2000	Chen et al	
		∪s- 6,079,256	06/2000	Bareket	

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document  Country Code <sup>3</sup> "Number <sup>4</sup> "Kind Code <sup>5</sup> ( <i>if known</i> )	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	
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	INFORMATION DISCL	.OSURE	Filing Date	01/26/2004	
	STATEMENT BY APPLICANT		First Named Inventor	Smith et al	
			Art Unit	1756	
	(Use as many sheets as neces	ssary)	Examiner Name	C. Young	
Shee	<sub>st</sub> 2	of 8	Attorney Docket Number	38203-6081B	

	1	I	U. S. PATENT		
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		us-6,130,750	10/2000	Ausschnitt et al	
		us-6,137,578	10/2000	Ausschnitt	
		us-6,142,641	11/2000	Cohen et al	
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		us-6,573,986	06/2003	Smith et al	
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		us-6,906,303	06/2005	Smith	. , , , , , , , , , , , , , , , , , , ,
		us-6,906,780	06/2005	Smith	
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		us-2005/0240895	10/2005	Smith et al	
		us- 5,402,224	03/1995	Hirukawa et al	

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Examiner Signature	Date Considered	

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s	Substitute for form 1449A/PTO		Complete if Known		
			Application Number	10/765,223	
	NFORMATION DISC	LOSURE	Filing Date	01/26/2004	
5	STATEMENT BY APP	PLICANT -	First Named Inventor	Smith et al	
			Art Unit	1756	
	(Use as many sheets as nec	essary)	Examiner Name	C. Young	
Sheet	3	of 8	Attorney Docket Number	38203-6081B	

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		us- 5,615,006	03/1997	Hirukawa et al	
		us- <b>5,894,350</b>	04/1999	Hsieh et al	
		us- 6,259,525	07/2001	David	
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FOREIGN PATENT DOCUMENTS					
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Substitute for form 1449B/PTO Complete if Known **Application Number** 10/765,223 INFORMATION DISCLOSURE Filing Date 01/26/2004 STATEMENT BY APPLICANT First Named Inventor Smith et al Art Unit 1756 (Use as many sheets as necessary) **Examiner Name** C. Young Sheet 8 Attorney Docket Number 38203-6081B

		NON PATENT LITERATURE DOCUMENTS	
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T²
		Armitage et al, Analysis of overlay distortion patterns, SPIE Vol. 921, 207:221, 1988	
-		Biesterbos et al., A New Lens for Submicron Lithography and its Consequences for Wafer Stepper Design, SPIE Vol. 633, Optical Microlithography V, 34:43, 1986	
		Bjorkholm et al., Reduction Imaging at 14nm Using Multilayer-Coated Optics: Printing of Features Smaller than 0.1 Micron, Journal Vacuum Science and Technology, B 8(6), 1509:1513, Nov/Dec 1990	
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		Brunner, Impact of Lens Aberrations on Optical Lithography, IMB Journal of Research and Development: Optical Lithography, 41(1-2): 57-67 (1997)	
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		Goodwin et al., Expanding Capabilities in Existing Fabs with Lithography Tool-Matching, Solid State Technology, 97:106, June 2000	

Examiner	Date	
Signature	Considered	

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Substitute for form 1449B/PTO Complete if Known Application Number 10/765,223 INFORMATION DISCLOSURE Filing Date 01/26/2004 STATEMENT BY APPLICANT First Named Inventor Smith et al Art Unit 1756 (Use as many sheets as necessary) **Examiner Name** C. Young Sheet 8 Attorney Docket Number 38203-6081B

	_	NON PATENT LITERATURE DOCUMENTS	
Examiner Cit No		Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T²
		Handbook of Microlithography, Micromachining and Microfabrication, Book: Vol. 1, "Microlithography", Rai-Choudhury, P. (Ed.), SPIE Optical Engineering Press, SPIE, Bellingham, Washington, pp. 417-418 (1997)	
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		Lin, "The Attenuated Phase-Shifting Mask", Solid State Technology, Special Series/Advanced Lithography, 35(1): 43-47 (1992)	
		MacMillan et al, "Analysis of Image Field Placement Devations of a 5X Microlithographic Reduction Lens", SPIE, 334:78-89 (1982)	
		Martin et al, Measuring Fab Overlay Programs, SPIE Conference on Metrology, Inspection, and Process Control for Microlithography XIII, 64:71, March 1999	

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Substitute for form 1449B/PTO

Sheet

## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

8

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		McFadden, C. et al, A Computer Aided Engineering Workstation for Registration Control, SPIE Vol. 1087, 255:266, 1989			
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		Progler et al., Method to Budget and Optimize Total Device Overlay, SPIE Vol. 3679, 193:207, 1999			

Examiner	Date	
Signature	Considered	

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INFORMATION DISCLOSURE
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First Named Inventor Smith et al
Art Unit 1756

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-		Raugh, "Error Estimation for Lattice Methods of State Self-Calibration", SPIE, 3050:614-625 1997			
-		Starikov et al., Accuracy of Overlay Measurements: Tool and Mark Asymmetry Effects, Optical Engineering, 1298:1309, 1992			
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	Examiner	Date	
l	Signature	Considered	J

<sup>\*</sup> EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached.

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Substitute for form 1449B/PTO	Complete if Known		
	Application Number	10/765,223	
INFORMATION DISCLOSURE	Filing Date	01/26/2004	
STATEMENT BY APPLICANT	First Named Inventor	Smith et al	
	Art Unit	1756	
(Use as many sheets as necessary)	Examiner Name	Unknown	
Sheet 8 of 8	Attorney Docket Number	38203-6081B	

		NON PATENT LITERATURE DOCUMENTS	
Examiner Initials*	Cite No.1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T²
		van den Brink et al, New 0.54 Aperture I-Line Wafer Stepper with Field by Field Leveling Combined with Global Alignment, SPIE Vol. 1463, 709:724, 1991	
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•		van Schoot , 0.7 NA DUV Step and Scan System for 150nm Imaging with Improved Overlay, SPIE Vol. 3679, 448:463, 1999	
<del> </del>		Yost et al., Lens Matching and Distortion Testing in a Multi-Stepper, Sub-Micron Environment, SPIE Vol. 1087, 233:244, 1989	
		Zavecz, Life Beyond Mix-and-Match: Controlling Sub-0.18 Micron Overlay Errors, Semiconductor International, July 2000	
		Zavecz, "Machine Models and Registration", SPIE Cirtical Reviews of Optical Science and Technology, CR52:134-159 (1994)	
		Zych et al., Electrical Methods for Precision Stepper Column Optimization, SPIE Vol. 633, 98:105, 1986	

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